China's poverty statistics

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Abstract

China's official poverty statistics show a dramatic reduction in poverty from 31% of the rural population in 1978 to 3% in 2000. We evaluate possible sources of bias in these estimates and conclude that the official statistics underestimate rural poverty and overstate the speed of poverty reduction. Direct measures of nutritional outcomes support the contention that poverty is more widespread than suggested by official statistics. Priority should be given to constructing new statistics to accurately measure urban poverty. The method for calculating county income per capita, a key policy variable affecting official poor county designation, is ad hoc and subject to political influence. © 2002 Elsevier Science Inc. All rights reserved.

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1. Introduction

China's official statistics show a dramatic reduction of China's poor population from 250 million in 1978 to 32 million in 2000 (Table 1). As a share of the rural population, the poverty headcount fell from 33% to 3% over this period, a reduction of historic magnitude. However, alternative estimates of poverty in China find a much higher poverty rate. Some differ from official statistics not only in the level of poverty but also in the trends in poverty reduction over time (Table 2).

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Table 1
China's official poverty headcount, 1978–2000

Year	Rural population (million persons)	Poor population (million persons)	Percentage of poor
1978	803	250	30.7
1984	843	128	15.1
1985	844	125	14.8
1986	850	131	15.5
1987	857	122	14.3
1988	867	96	11.1
1989	878	106	12.1
1990	896	85	9.5
1991	905	94	10.4
1992	912	80	8.8
1993	913	75	8.2
1994	915	70	7.6
1995	917	65	7.1
1996	919	58	6.3
1997	915	49	5.4
1998	920	42	4.6
1999	922	34	3.7
2000	928	32	3.4

China's poverty headcount, the main official poverty statistics, is highly politicized. Government leaders are quite sensitive to perceptions that they have failed to eradicate widespread poverty, which could undermine the government's legitimacy in light of its socialist ideology. Beginning in 1986, the government initiated a large-scale, regionally targeted poverty alleviation program led by the superministerial level Leading Group for Economic Development in Poor Areas. In 1993, the government passed the ambitious *baqi*, or "eight-seven," plan to lift the remaining 80 million poor out of poverty by the end of the millennium or within 7 years. Provincial governors were made personally responsible for meeting poverty reduction goals.

Given this context, it is important to critically assess official claims that the war against absolute poverty is essentially over. In this paper, we focus attention on the poverty headcount, the statistic that receives by far the most attention. The poverty headcount is calculated as the percentage of households with incomes that fall below a poverty line necessary to meet minimal nutritional and other requirements. In Section 2, we explain how the official poverty headcount is calculated, discuss possible sources of bias, and assess alternative poverty estimates. Section 3 describes evidence from nutrition-based indicators. Section 4 discusses the emerging problem of urban poverty. In Section 5, we assess the calculation of county income per capita, the key statistic used for poor county designations that lie at the heart of China's poverty alleviation program. Section 6 summarizes the main findings.

Table 2
Rural poverty estimates

Source	Sample data	Survey	1978	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
China Official	National (income groups and household income)[a]	SSB	30.7	15.1	14.8	15.5	14.3	11.1	12.1	9.5	10.4	8.8	8.2	7.6	7.1	6.3	5.4	4.6
The World Bank (1992)	National (income groups)	SSB	33.0	11.0	11.9	11.9	11.1	10.4	12.3	11.5								
The World Bank (2001)	National (income groups)	SSB								31.3	31.7	30.1	29.1	25.9	21.8	15.0	13.5	11.5
The World Bank (2001)	National (expenditure groups)[b]	SSB								42.8	40.8	40.9	40.8	34.9	31.0	24.3	24.2	
Khan (1996)	National (income groups)	SSB			14.0			16.1		13.9		13.6	14.1	13.6				
Khan and Riskin (2000)	19 provinces (household income)	Own survey						15.5−32.7							12.1−28.6			
Riskin and Li (2001)	19 provinces (household income)	Own survey						12.7							12.4			
Jalan and Ravallion (1998)	5 provinces (household expenditure)	SSB adjust			28.4	27.5	23.0	22.8	25.3	28.3								

[a] Income groups before 1995, household data from 1995 onwards.
[b] Expenditure groups constructed from national mean expenditure and income group distributions.

2. The poverty headcount

2.1. Official poverty line and poverty count

The official poverty lines and the poverty headcounts that are now commonly reported were first announced in 1994 (Tang, 1994). Before then, a few ad hoc poverty estimates had been announced by government officials as early as 1989 (Zhou, 1990), but these were superceded by the 1994 official figures.[1]

The poverty lines for 1984–1997 are based on calculations made in 1985 using State Statistical Bureau (SSB) national rural sample survey data for 1984.[2] Following standard methodology, the SSB divided living expenditures into two parts—food expenditures and nonfood expenditures. To calculate minimum necessary food expenditures, the SSB assumed a minimum caloric intake level of 2400 kcal, the recommended daily caloric intake determined by the China Nutrition Association (Wang, Xia, & Liu, 1996).[3] A standard food bundle was defined based on the actual consumption pattern of households consuming less than 2400 kcal/day. The amount of selected food items and associated energy intake and expenditures for each item are reported in Table 3. The minimum expenditure for food was calculated using weighted prices, which combined planned and market prices. Required food expenditures in 1984 were 119 yuan. Later, in 1990, the prices used to value self-consumed production in calculating income changed from the planned price to a weighted purchasing price, and the poverty line was adjusted accordingly.

Initially, nonfood expenditures were calculated as a fixed percentage of total expenditures using an Engel's coefficient of 0.6. This coefficient was chosen because it was comparable to that used in calculating poverty lines in other countries and was roughly equal to the average share of expenditures spent on food by Chinese rural households. Adding nonfood expenditures to the food poverty line led to a poverty line in 1984 of 200 yuan.

Chen and Ravallion (1996) report that baseline poverty line calculations were undertaken in 1988 using a slightly different bundle than that reported above.[4] This led to a poverty line of 260 yuan in 1988, 168 yuan for food expenditures, and 92 yuan for nonfood expenditures.

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[1] The Leading Group and SSB jointly announced the poverty count for the first time in a communiqué in July 1989. They estimated that the poor population with an annual per capita net income below 200 yuan had been reduced from 102 million in 1985 to 26.63 million by the end of 1988 using current prices or to 62.20 million using 1985 constant prices. The World Bank (1992) criticizes low official estimates of 27 and 39 million poor in 1988 and 1989 for being based on the 1985 poverty line of 200 yuan, unadjusted for inflation. According to Zhou and Gao (1993), SSB conducted research on rural poverty standards for the Leading Group Office in the early 1990s. The newly established poverty lines for 1988 and 1989 were 260 and 285 yuan, and the poor population in 1989 was 84 million, a number much lower than the later official figure of 109 million.

[2] The poverty line for 1978 of 100 yuan was calculated by using the same food bundle and different food prices in 1978 (Tang, 1994).

[3] Many official documents and publications erroneously report a caloric standard of 2100 kcal/day (e.g., Leading Group Office of Poverty Reduction of the State Council (LGOPR), 2001). Detailed descriptions of food bundle calculations all point to a 2400-kcal/day standard (see also Chen & Ravallion, 1996).

[4] Different SSB staff appear to provide different accounts of base year calculations.

Table 3
SSB poverty line food bundle, 1984

Food items	Energy (kcal/kg)	Consumption amount (kg/year)	Energy intake (kcal/day)	Proportion (%)	Weighted prices (yuan/kg)	Expenditure (yuan)
Grain	3510	220.00	2115.60	88.40	0.30	66.00
Pork	3950	8.70	94.00	3.93	1.85	16.10
Vegetable oil	8990	2.45	60.34	2.52	1.90	4.66
Vegetable	204	100.00	56.00	2.34	0.21	21.00
Egg	1635	1.30	5.80	0.24	2.06	2.68
Animal oil	8960	1.36	33.40	1.40	1.40	1.90
Beef/mutton	1746	0.54	2.60	0.11	2.47	1.33
Milk	1522	0.75	3.13	0.13	0.40	0.30
Poultry	1845	0.74	3.74	0.16	2.84	2.10
Fish/seafood	1091	0.96	2.87	0.12	1.14	1.09
Sugar	3970	1.00	10.90	0.46	0.92	0.92
Fruit	604	3.00	4.96	0.21	0.55	1.65
Total			2393.34	100.00		119.73

Khan and Riskin (2001) also report the 1988 official poverty line to be 260 yuan. This is at odds with the official poverty line of 236 yuan in Table 4 reported by Tang (1994) of the SSB, although if the 1990 upward pricing adjustment is applied proportionally to the 1988 poverty line, the adjusted poverty line is 263. For all other years, the SSB simply adjusted the calculated poverty lines for inflation. However, the price indices used were not consistent over time and are not documented in published sources.[5]

The SSB conducted a new set of poverty line calculations using the 1998 national rural sample data (SSB, 2000). A standard food bundle of 27 items in 15 categories was established from the mean consumption pattern of households with income per capita less than 800 yuan, adjusted to meet a minimum caloric standard of 2100 kcal/day. The annual income necessary to purchase the standard bundle, or food poverty line, was 527 yuan. The nonfood expenditure share was calculated using a regression method proposed by Ravallion and Bidani (1994).[6] Required nonfood expenditures were estimated to be 108 yuan, leading to a poverty line of 635 yuan. Interestingly, this is consistent with a poverty line that inflates the 1997 poverty line by the rate of inflation (Table 4). However, the nonfood expenditure share of 17% is substantially lower than the 40% share assumed in earlier calculations.

Once the official poverty line is set, the poverty count is estimated using income data from the SSB's national rural household sample. The use of income rather than expenditure data despite the availability of the latter contrasts with practice in most countries. Beginning in 1998, the SSB began using a dual criteria using both income and expenditure data. Households are poor if their income falls below the poverty line and their consumption is

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[5] Personal communication with SSB staff.

[6] The method is based on a regression of food expenditure share on a constant and the log of (expenditures/ food poverty line). It is straightforward to calculate the food share for households whose food expenditures exactly equal the food poverty line (upper line) or whose total expenditures equal the food poverty line (lower line).

Table 4
Sensitivity of poverty line to chosen price index

	Official	Poverty lines using rural consumer price index to inflate 1985 official line	Using rural retail price index to inflate 1985 official line	Inflation rates		
				Implicit from official poverty lines	Rural consumer price index	Rural retail price index
1984	200					
1985	206	206	206	3		3
1986	213	219	213	3	6	3
1987	227	232	223	7	6	5
1988	236	273	257	4	17	15
1989	259	325	305	10	19	19
1990	269	340	319	4	5	5
1990[a]	300	379	356			
1991	304	388	366	1	2	3
1992	317	406	378	4	5	3
1993	350	462	422	10	14	12
1994	440	570	495	26	23	17
1995	530	669	568	20	18	15
1996	580	722	603	9	8	6
1997	640	740	610	10	3	1
1998	635	733	596	− 1	− 1	− 2
1999	625	722	580	− 2	− 2	− 3
2000	625	721	571	0	0	− 2

[a] 1990 adjusted poverty line pricing own-produced goods at weighted prices.

less than 1.5 times the poverty line or if consumption is below the poverty line and income is less than 1.5 times the poverty line.

Since 1984, the SSB rural survey has encompassed about 67,000 households in 35% of all counties in China (Chen & Ravallion, 1996). The sample is constructed to be nationally and provincially representative. During the late 1980s, the sample was not systematically adjusted to include new households, leading to aging of the sample. Since 1990, part of the sample has been rotated each year, reducing the aging problem. Unlike surveys in most countries, which are based on one-time visits to households, the SSB households keep self-recorded diaries of all income and expenditures during the year.

The SSB has used a number of accounting conventions that are nonstandard. First, as described above, planned prices were used to value self-consumed production until 1990. Second, expenditure on housing and durables are credited to the current year even though actual consumption of such items accrues over many years. Third, some income categories are excluded or poorly estimated, such as rental value of owner-occupied housing.

2.2. Potential sources of bias

The methodology used to calculate the official poverty count that we have just described may be subject to a number of different sources of potential bias. In this section, we briefly discuss each in turn.

2.2.1. Caloric standard

The 2400-kcal/day standard is high by international standards. China's Nutrition Association recommends 2400 kcal/day but reports 2000 kcal as a minimum caloric requirement, which is more in line with international norms (Zhou & Gao, 1993). The World Bank (1992) used a caloric standard of 2150 kcal. Khan and Riskin (2001) use lower and upper standards of 2100 and 2150 kcal.

2.2.2. Food bundle

Consumption items viewed to be non-necessities were excluded from the 1984 food bundle, e.g., alcohol and candy. As a result, grain accounted for 88% of expenditures (Table 3) even though grain comprises only about 70% of actual food expenditures for poor households. Overweighting of grain in the standard bundle leads to underpricing of calories since grain is a relatively cheap source of calories. This puts downward bias on the poverty line and leads to an underestimation of poverty.

2.2.3. Planned prices

Before 1990, own-produced consumption goods were priced using planned rather than market prices. Food items in the standard bundle were valued using weighted prices defined as:

$$P_i = P_i^{\mathrm{p}} R_i + P_i^{\mathrm{m}}(1 - R_i),$$

where P_i is the weighted price of the food item i, P_i^{p} is the official planned retail price of the item, P_i^{m} is the market price, and R_i is the proportion of consumption of item i from own

production. Weighted prices were necessary because the SSB's method of income calculation also priced self-consumed production using planned prices. Since both the poverty line and measured income are affected by the valuation method, the direction of bias is ambiguous.

2.2.4. Nonfood expenditures

The nonfood expenditure share of 40% used prior to 1998 was not based on systematic empirical analysis of Chinese consumption patterns. The sharp drop to a 17% nonfood expenditure share in 1998 apparently reflects the selection of a conservative poverty line (see footnote 6) and raises concern that required expenditures are underestimated, creating downward bias in the poverty count. In comparison, Chen and Ravallion (1996) estimate nonfood expenditure shares of 25% and 40% for lower and upper poverty lines. Khan and Riskin (2001) calculate lower and upper bounds for nonexpenditure shares of 33% and 40%. Data made available to the authors by the SSB show that, in 1999, the nonfood expenditure shares of the poor, defined as those with incomes below 855 yuan per capita, in Guizhou, Gansu, and Henan averaged 27%, 33%, and 49%. Thus, the 17% 1998 standard is well below other estimates of nonfood expenditures.

2.2.5. Price indices

The implicit inflation rates evident in the official poverty lines are much lower than the rural consumer price index. Even the rural CPI is likely to underestimate the growth in living costs of the poor, because their budget shares for food are higher and food prices have grown faster than other prices.[7] Because the poverty counts can be very sensitive to the price indices used to adjust the poverty line each year, we show how the implicit price changes calculated from the official poverty lines differ from the national rural consumer and retail price indices (Table 4). In the initial years, the official poverty lines are consistent with the rural retail price index. In the final several years, they are consistent with the rural consumer price index. However, in the intervening years, there are large discrepancies. Most notably, the poverty line increases only modestly during the high inflation years of 1988 and 1989, and there is a sharp increase in the poverty line in 1997 far in excess of inflation. This helps explain why official statistics show a steady reduction in poverty in the late 1980s while other estimates show little change. If the 1985 line is inflated by the rural CPI, the 2000 poverty line reaches 721 compared to the official line of 625. This suggests that poverty reductions over time may be greatly exaggerated.

2.2.6. Regional price differences

Like poverty lines in many countries, the SSB's national poverty lines do not make allowances for regional price differences in calculating required food expenditures.[8] Food prices vary greatly among different provinces due to transport costs, imperfect market integration, and other factors. Chen and Ravallion (1996) estimate that the cost of purchasing

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[7] Chen and Ravallion (1996) calculate CPIs for the poor that grow significantly faster than the overall CPI in two of four provinces. Khan and Riskin (2001) find that the CPI for the poor is 4% higher than the overall CPI for the period 1988–1995.

[8] Nor do they allow for regional variations in the food bundle itself.

the SSB food bundle was 23% higher in Guangdong than in Guangxi in the late 1980s. Poverty officials in rich provinces, where prices tend to be higher, complain bitterly over the lack of adjustments for local prices. For example, in 1992 and 1995, the SSB of Jiangxi Province calculated provincial poverty lines of 400 and 750 yuan using local prices and the national food bundle compared to national poverty lines of 320 and 540 yuan. Failure to account for regional price differences in China exaggerates the concentration of poverty in poor regions.

2.2.7. Sampling bias

Some have criticized the SSB sample for underrepresenting households in remote areas, illiterate households, and minorities, which would lead to an underestimation of the poor population. Choosing such households can make surveys more costly to administer, as they require greater time to reach and supervise. This is particularly true given the requirement that sample households keep self-recorded diaries of income and expenditures, a difficult task for the illiterate. Such biases were confirmed in field visits by the authors to SSB sample villages in a number of poor counties in different provinces. Chen and Ravallion (1996), however, find that measured illiteracy among persons in the SSB sample for four provinces was not systematically lower than that measured by the census of 1990.

2.2.8. Income and expenditure measurement

Aside from the use of planned prices described above, there are other potential problems in the income and expenditure definitions used by the SSB. Khan and Riskin (2001) find that their survey data produce income estimates 39% higher than that of the SSB in 1988 and 46% higher in 1995. The most important missing component in the SSB income data is the rental value of owner-occupied housing, which accounts for 37% of the difference in 1995. The consumption value of housing and durables also enters in the expenditure side of the household ledger. Other systematic omissions include cash income from second jobs, unemployment benefits, income in kind, income for being a village cadre, and other cash income not from household activities (Khan and Riskin, 2001).[9] Importantly, the official income data appear to underestimate the rate of increase in per capita income. The effect on the rate of poverty reduction is unclear, because excluded expenditures also affect poverty line calculations. Empirically, the omissions appear to lead to overestimation of poverty reductions.

A less discussed feature of the SSB data is the use of self-recorded diaries to estimate income and expenditures. Unlike many surveys, which ask about income and expenditures for the past month in a one-visit survey and extrapolate to estimate annual totals, the SSB sums 12 monthly records to create annual data. In addition to reducing measurement and recall error, aggregating monthly totals reduces measured dispersion and reduces poverty headcounts and measures of poverty severity (Gibson, Huang, & Rozelle, 1999).

2.2.9. Grouped versus household data

Many of the poverty estimates using SSB data are calculated from aggregate data on the distribution of households across different income ranges. The SSB itself followed this

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[9] There also are smaller discrepancies in labor income and income from household production.

practice until 1995, when it began estimating poverty counts directly from the national household data. All other national estimates use grouped data (Table 2). The number of income groups available from published sources is very small in some years and inconsistent across years. Subgroup means and population counts, rather than the number of households, are lacking. This necessitates making strong distributional assumptions to generate poverty counts, leading to unpredictable bias.

2.2.10. Income versus expenditures

Expenditures are considered to be a better measure of both current and long-term welfare. Because individuals prefer to smooth consumption over time, expenditures tend to vary less from year to year than incomes. However, despite the availability of expenditure data, China has always calculated poverty rates using income data. This can lead to two types of bias. First, incomes exhibit greater dispersion than expenditures because they are more likely to be influenced by transitory factors. This increases the poverty count. Second, and more importantly, average income are 10–20% higher than average expenditures so that using income data results in lower poverty rates. The poverty headcounts of The World Bank (2001) are about 10% higher using expenditure data rather than income data (Table 2).

2.2.11. Transient versus chronic poverty

Many feel it is important to distinguish between those who are temporarily poor versus those who are chronically poor. The causal factors and policy implications may be very different for transient versus chronic poverty. SSB poverty estimates are based on one year of data. Using panel data for households in four provinces from 1985 to 1990, Jalan and Ravallion (1998) find that the share of the poor who are not chronically poor vary from 30% to 46% in any given year. McCulloch and Calandrino (2001) find that, in 1991 and 1995, 57% and 46% of the poor in Sichuan experienced transitory poverty. It is worth bearing in mind that much of measured transient poverty could result from measurement error. Nevertheless, if one's goal is to measure chronic poverty, annual poverty headcounts are likely to overstate the extent of such poverty.

2.3. Alternative estimates of rural poverty

Considering these different sources of bias, what can we say overall about the accuracy of China's official poverty statistics? Alternative estimates of rural poverty presented in Table 2 offer a wide range of point estimates in the same year and different trends in poverty reduction during different subperiods.

Considering all of the possible sources of bias, we find that a majority of factors and those with the largest likely influence lead to an underestimation of the extent of rural poverty and an overestimation of poverty reductions over time. Two of the largest sources of bias are from underinflation of poverty lines over time to reflect price changes and the use of income rather than expenditure data. Improper inflation adjustments lead to a poverty line in 2000 that is 13% below what it should be. Use of income rather than expenditure data exaggerates average welfare by 10–20%. In addition, the food poverty line is overly austere before 1998 because of a standard food bundle that is not consistent with actual consumption patterns, and

the nonfood expenditure share is unrealistically conservative since 1998, both leading to downward bias in the poverty line. SSB sampling may exclude some of the poor. The exclusion of income and expenditure categories, whose theoretical effects on the poverty count are ambiguous, in practice appear to underestimate poverty. The only factors that lead to upward bias in the poverty count are a high caloric standard (2400 kcal) and a high prevalence of transitory poverty, which may reduce concerns about chronic suffering.

The World Bank's (2001) recent poverty report uses a dollar-per-day poverty line, which leads to much higher poverty headcounts than the official statistics. The dollar-per-day standard was established to facilitate intercountry comparisons but is not based on nutritional standards, consumption patterns, or social norms specific to China (The World Bank, 1996). Thus, if the dollar-per-day line in fact more accurately reflects rural poverty in China today, it is likely due to problems in the methodology used to calculate official statistics rather than any inherent preference for an international standard. The Khan and Riskin (2001) range of estimates exemplifies how sensitive the poverty count can be to assumptions about the poverty line (Table 2).

Because of the arbitrariness of choosing any one poverty line, many feel it is more important to examine trends in poverty over time. All estimates agree that there was a spectacular reduction in poverty in the early 1980s. All estimates other than the official poverty count show little or no progress in poverty reduction in the late 1980s. Reductions in the official count are almost certainly due to insufficient inflation of the poverty line in 1988 and 1989. In the early 1990s, Khan (1996) and The World Bank (2001) show little change until after 1993. The official poverty count falls steadily throughout the 1990s. These differences are not due to differences in inflators or income definition (all use SSB grouped data), so must reflect different trends in different parts of the income distribution. Khan and Riskin (2001) and Riskin and Li (2001) emphasize the small magnitude of poverty reduction from 1988 to 1995. Riskin and Li report that, using SSB's own income definition and poverty line, they estimate a poverty headcount of 9.4% in 1995, much higher than the official 7.1%. Since the mean incomes are the same in their 19-province sample and the SSB's national sample, the only plausible explanation are differences in the distribution of incomes (i.e., incomes in the other 11 provinces are more dispersed with greater poverty), which should be testable using grouped data.[10] Khan and Riskin attribute their surprising result to their refined income measures. However, if rental income from owner-occupied housing is rapidly increasing as a share of total income, including this part of income without adjusting the nonfood expenditure shares differently in the 2 survey years may bias the change in poverty downward. In any case, what is striking is the rapid fall in poverty in the mid-1990s reported by The World Bank. Using the income data, The World Bank estimates that the poverty headcount fell from 29.1 to 11.5 in 5 years, a reduction that if true is as impressive as that of the early 1980s. At least for the period after 1995, this is not contradicted by alternative estimates and merits further investigation.

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[10] Riskin and Li (2001) oddly use a national poverty line while deflating incomes by provincial price indices, which will produce unpredictable bias in the change of the poverty headcount.

3. Nutritional outcomes measures

The poverty headcount is conceptually a nutrition-based standard of welfare, since the poverty line is constructed to reflect the income necessary to purchase a food bundle that provides a minimum acceptable number of calories per day. One way to validate official poverty statistics is to look directly at nutritional outcomes in the population. Here, we briefly summarize available evidence on caloric intake and stunting in children.

Zhu (2001) analyzes 1995 rural household data from 19 provinces and finds that 17% of the rural population had caloric intake below 2100 kcal/day and 28% had caloric intake below 2400 kcal/day, the caloric standard used in constructing the official poverty line. She also finds that the prevalence of inadequate calorie consumption is only weakly correlated with income, casting doubt on exclusive use of income as a poverty indicator. Using aggregate production, trade, stock, and demographic data and a minimum energy requirement of 1920 kcal/day, the Food and Agriculture Organization (FAO) (2000) estimated that the share of China's population with insufficient calorie intake fell from 30% in 1979–1981 to 17% in 1990–1992 to 11% in 1996–1998.

A common indicator of long-term nutrition is the prevalence of stunting in children. A national survey by WHO/UNICEF in 1992 found a stunting rate in children of 31.4% (United Nations, 2000). A series of national surveys conducted by the Ministry of Health found stunting rates of 41.4% in 1990, 39.1% in 1995, and 22.0% in 1998.[11] In officially designated poor counties, the stunting rate is much higher. The 1995 MOH survey found a stunting rate of 43% in poor counties and the China Rural Poverty Survey directed by the authors found a stunting rate of 46.1% among children in six poor counties. These stunting rates compare with the following estimates in different parts of the developing world in 1995: 36% in all developing countries, 36.5% in Africa, 38.8% in Asia, and 12.6% in Latin America (Administrative Committee on Coordination, Subcommittee on Nutrition (ACC/SCN), 2000). These statistics suggest high rates of undernutrition in rural China. They also suggest little progress in poverty reduction in the early 1990s but substantial progress beginning in the mid-1990s. This pattern is consistent with the poverty headcount estimates.

4. Urban poverty

The Chinese government has treated poverty exclusively as a rural problem. To date, the government has released no official poverty lines or poverty counts for urban populations. State guarantees of jobs, pensions, housing, and healthcare for all urban workers under socialism, along with a strict residence permit system, created a large urban–rural income gap that has not been reversed by market reforms. Early estimates of urban poverty by The World Bank (1992) found insignificant poverty incidence through 1990. However, since the mid-

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[11] Stunting rates are for rural children under five years age. Urban stunting rates were 9.4 percent in 1990 and 4.1 percent in 1998. For more details, see China Academy of Preventive Medicine and National Bureau of Statistics (1999).

1990s, restructuring of state-owned enterprises and substantial layoffs of workers has created significant dislocation for many workers. Growing urban poverty thus has become a very real prospect that will demand monitoring and policy response from government. The current response is ad hoc and nonstandard. Individual cities have responded with income subsidy programs with different income standards, often reflecting local budgetary capacity.

Others have come up with urban poverty estimates. Using grouped income data, Khan (1996) estimates that the urban poverty headcount fell from 20% in 1981 to 13% in 1985 to only 5% in 1991. Khan and Riskin (2001) estimate an urban poverty rate of 6.8% in 1988 and 8.0% in 1995. They argue that The World Bank's urban poverty line is too small a percentage (23%) of average income to be realistic. Without going into greater detail, we simply make the point that many of the potential biases in constructing rural poverty lines and poverty counts also characterize urban poverty statistics. Valuation of nonwage benefits in measuring income is a particularly difficult challenge.

5. County income per capita and poor county designations

China has established a large-scale, regionally targeted poverty investment program to steer substantial amounts of investment resources to officially designated poor counties. The Leading Group for Economic Development in Poor Areas first designated 258 national poor counties in 1986. After incremental additions to 331 counties by 1993, the government significantly increased the number of poor counties to 592 in 1993, nearly one third of all counties in China, after which there have been virtually no major changes. Because substantial resources are at stake, the accuracy of statistics determining poor county designations is an important determinant of the government's ability to target resources effectively. For this reason, and because there is little documentation about how county-level income statistics are calculated, we provide a brief assessment of the procedures as we understand them based on interviews with SSB officials. We do not concern ourselves with the changing standards for poor county designation, which are described in Park, Wang, and Wu (in press), except to note that county income per capita is the main criteria variable.

Rural income per capita statistics are generated through a reporting system supervised by the Division of Regional Economy under SSB, which is separate from the division of SSB that directs the rural household surveys. Each county SSB is responsible for estimating the county's rural net income per capita and reporting upward to the provincial SSB and finally the national SSB. If the county happens to be a national rural household survey sample county (35% of all counties), the county SSB may or may not use the household income data as the county average. In theory, this is ill-advised because the sampling scheme ensures representativeness only at the provincial and national levels. If there is no national survey in the county, there are two other data sources to estimate income per capita: provincial household survey data, which have been collected by the SSB in many counties in recent years, or Ministry of Agriculture data, which are based on annual reports of village leaders aggregated at the township and finally the county.

Differences in available information across counties could lead to bias in income per capita estimates. However, of even greater concern is the politicized nature of the statistical reporting system. The MOA data, the only estimate available for all counties, are based on reports made by village, township, and county officials. Interviews reveal that reporting at every level is subject to revisions by upper levels, even by provincial governments. There remains substantial discretion over how the official statistics are determined and no independent source of verification. While this does not mean that income per capita statistics are useless, it should lead to caution in interpretation and efforts, if possible, to find other indicators of local development.

6. Summary

China's official poverty statistics reveal a dramatic reduction in poverty from 31% of the rural population in 1978 to 3% in 2000. In this paper, we evaluate possible sources of bias in these estimates and conclude that the official statistics underestimate rural poverty and overstate the speed of poverty reduction. We have discussed the relative merits of alternative poverty estimates and attempted to resolve apparent discrepancies. Direct measures of nutritional outcomes in rural areas support the contention that poverty is more widespread than recognized by the Chinese government. We highlight the importance of developing new statistics to accurately measure urban poverty, which has increased during painful enterprise restructuring that will continue under the competitive pressures of the WTO. Finally, we assess the calculation of county income per capita and find it to be ad hoc and subject to political influence. This is especially disconcerting because the official county income per capita statistics are a main criteria used for selecting counties for targeted receipt of poverty alleviation investment funds and other policy support.

References

Administrative Committee on Coordination, Subcommittee on Nutrition (ACC/SCN) (2000). *The fourth report on the world nutrition situation* (ACC/SCN in collaboration with IFPRI, Geneva).

Chen, S., & Ravallion, M. (1996). Data in transition: assessing rural living standards in Southern China. *China Economic Review*, *7*, 23–56.

China Academy of Preventive Medicine and National Bureau of Statistics. (1999). Food and Nutrition Surveillance of China 1998 (zhongguo shiwu yu yingyang jiance 1998). Unpublished report.

Food and Agriculture Organization (FAO). (2000). *The state of food insecurity in the world*. Rome: FAO.

Gibson, J., Huang, J., & Rozelle, S. (1999). *Measuring expenditure inequality and poverty in urban China: can we do it as accurately, but more cheaply?* Working paper, Department of Economics, Waikato University, Hamilton, New Zealand.

Jalan, J., & Ravallion, M. (1998). Transient poverty in postreform rural China. *Journal of Comparative Economics*, *26*, 338–357.

Khan, A. (1996). *The impact of recent macroeconomic and sectoral changes on the poor and women in China*. New Delhi: International Labor Organization.

Khan, A., & Riskin, C. (2001). *Inequality and poverty in China in the age of globalization*. New York: Oxford University Press.

Leading Group Office of Poverty Reduction of the State Council (LGOPR) (2000). *China poverty paper*. Paper prepared for the International Conference on China's Poverty Reduction Strategy in the Early 21th Century, Beijing.

McCulloch, N. & Calandrino, M. (2001). *Poverty dynamics in rural Sichuan between 1991 and 1995*. Working paper, Institute of Development Studies, University of Sussex.

Park, A., Wang, S., & Wu, G. (in press). Regional poverty targeting in China. *Journal of Public Economics*.

Ravallion, M., & Bidani, B. (1994). How robust is a poverty profile? *The World Bank Economic Review, 8*, 75–102.

Riskin, C., & Li, S. (2001). Chinese poverty inside and outside the poor regions. In: C. Riskin, R. Zhao, & S. Li (Eds.), *China's retreat from equality: income distribution and economic transition* (pp. 329–344). Armonk: M.E. Sharpe.

State Statistical Bureau. (2000). *The monitoring report of rural poverty in China* (zhongguo nongcun pinkun jiance baogao). Beijing: China Statistics Press.

Tang, P. (1994). Research on poverty criteria and poverty situation in China. *Economic Research Reference Materials* (jingji yanjiu cankao ziliao), *52*, 2–13.

United Nations. (2000). *State of the world's children*. New York: United Nations.

Wang, S., Ying, X., & Liu, X. (1996). Criteria to measure poverty in China. In: *Institute of Agricultural Economics, Chinese Academy of Social Sciences. Research on economic an technological development in agriculture* (nongye jingji yu kefji fazhan yanjiu). (pp. 271–296). Beijing: China Agricultural Technology Press.

The World Bank. (1992). *China: strategies for reducing poverty in the 1990s*. Washington, DC: The World Bank.

The World Bank. (1996). *Poverty in China: what do the numbers say?* Background Note.

The World Bank. (2001). *China: overcoming rural poverty*. Washington, DC: The World Bank.

Zhou, B. (1990). Review of the poverty alleviation policies during the seventh five-year plan period. *The Tribune of Economic Development* (jingji kaifa luntan), *12*, 2–30.

Zhou, B., & Gao, H. (1993). Summary of poverty research and practice. *The Tribune of Economic Development* (jingji kaifa luntan), *1*, 1–44.

Zhu, L. (2001). Food security of low-income groups in rural China. In: C. Riskin, R. Zhao, & S. Li (Eds.), *China's retreat from equality: income distribution and economic transition* (pp. 229–244). Armonk: M.E. Sharpe.